REMARKS/ARGUMENTS

This is in response to the Office Action mailed July 22, 2010, a Final Rejection and accompanies a Request for Continued Examination. Please enter this Amendment

The amended claims and new claim 21 are now directed to a solar cell (as was original claim 16) having applied thereon an emission enhancing coating. New claim 21 is based on the international publication, page 4, lines 5-9.

With all claims directed to a solar cell, the subject of previous claim 16, the only relevant rejection in the Action of July 22, 2010 is item no. 4, a combination of three references. These references are discussed below.

Nelson teaches an anti-reflective thin film stack to be used on a glass substrate, comprising an iridescence-suppressing interlayer combined with transparent thin film coatings, suitable for use on a glass substrate (Nelson, column 3, lines 6-9). The first layer in the thin film stack of Nelson is typically a conductive layer (Nelson, column 4, lines 54-67), while the second layer in the thin film stack is typically a non-conductive layer (Nelson, column 5, lines 1-13). This is further confirmed by all of the Examples in Table 1.

Contrary to Nelson, the solar cell as defined in the present claims has an emission enhancing coating, wherein as a first film a non-conductive transparent film is applied to the substrate. Moreover, the thicknesses of the various transparent films differ significantly from the films disclosed by Nelson. In particular, the thicknesses of each of the non-conductive transparent films in the emission enhancing coating of the present invention is in the range of 500 to 1500 nm, whereas Nelson discloses a range of 70 to 150 nm (700 to 1500 Ångstroms). This difference is an order of magnitude.

To illustrate this, the total thickness of the emission enhancing coating of the present invention is at least 1020 nm (at least two electrically conductive layers with a minimal thickness of 10 nm and at least two non-conductive layers with a minimal thickness of 500 nm). In Table 1 of Nelson (column 7, lines 18-32), the thickest layer disclosed has a thickness of 240 nm.

Buhay *et al.*, first of all, do not relate to a solar cell. Moreover, Buhay *et al.* teach a coating stack comprising only two layers, namely a functional coating and a protective coating. The functional coating typically has a thickness of 60 to 240 nm (Buhay *et al.*, page 6, paragraph 59), while the protective coating typically has a thickness of 1000 to 3000 nm (Buhay *et al.* page

7, paragraph 63). The function of the protective coating is to significantly increase the emissivity of the entire coating stack in comparison of just the functional coating alone (Buhay *et al.*, page 4, paragraph 34 and page 6, paragraph 60). Clearly, the coating stack taught by Buhay *et al.* is completely different from the coating stack taught by Nelson and also completely different from the coating stack as defined in the above claims (which require at least four alternating layers, two electrically conductive and two electrically non-conductive).

In addition, the Examiner seems to argue that paragraph 34 on page 4 of Buhay *et al.* teaches that an increase of the thickness of the protective layer would lead to an increase in emissivity value (Final Office Action dated July 22, 2010, page 3, first paragraph). However, upon studying this paragraph more closely it is apparent that this paragraph is completely silent with respect to a relation between the thickness of the protective coating and an increase in emissivity. This appears to be pure speculation[1] by the Examiner. The difference in emissivity values mentioned in paragraph 34 of Buhay *et al.* may just as well be caused by protective coatings having different compositions. Accordingly, the relationship between emissivity value and thickness of the protective coating alleged by the Examiner does not appear to be disclosed by Buhay *et al.*

Furthermore, since the stack of functional coating and protective coating between two glass plies in Buhay *et al.* is fundamentally different from an anti-reflective multilayer coating stack as taught by Nelson, this document cannot be used to overcome the deficiencies therein as compared with the present invention. In particular, Nelson fails to teach that the first layer is a non-conductive layer. This deficiency cannot be compensated for by the combination of functional and protective coating in between two glass plies as taught by Buhay *et al.*

[1] An obviousness rejection must rest on a sound factual basis with these facts being deduced without hindsight reconstruction of the invention from the prior art. The Examiner may not, because of doubt that the invention is patentable, resort to speculation, unfounded assumption, or hindsight reconstruction to supply deficiencies in the factual basis for the rejection. *See In re Warner*, 379 F.2d 1011, 1017 (CCPA 1967). … "rejections on obviousness grounds cannot be sustained by mere conclusory statements; instead, there must be some articulated reasoning with some rational underpinning to support the legal conclusion of obviousness." *KSR*, 127 S. Ct. at 1741 (citing *In re Kahn*, 441 F.3d 977, 988 (Fed. Cir. 2006)).

In the Final Office Action, the Examiner further relies on Woodard *et al.* for disclosing the presence of chrome, nickel or rhodium in the conductive layer. Woodard *et al.* relate to window film members that provide solar rejection and low visible reflection. Such film members typically provide solar screening, *i.e.* have a low transmission in both the visible range (400 to 700 nm and the near infrared range (700 to 2100) (Woodard *et al.*, page 1, paragraph 3). Clearly, the skilled person would not think of applying such a film member on top of a solar cell, which is designed to collect radiation in the visible and the near infrared (see for instance Rancourt *et al.*, column 1, lines 37-39).

The Examiner further cites the reference of Wakelyn. This document relates to the very specific application of improving the optical and thermal control property characteristics of an aluminum surface having a metal phosphate protective coating thereon (Wakelyn, column 1, lines 11-13). Solar cell applications appear to be neither disclosed, nor suggested.

In respect of solar cell applications, the Examiner has cited Rancourt *et al.* This document describes a coating having enhanced emissivity and which may be applied, *inter alia*, on a solar cell. The coating has at least one “period” consisting of two layers, one spacer layers and one absorber layer; see reference numeral 14 (16 and 17) in Figure 1. Rancourt *et al.* teaches thorium fluoride as the suitable material for the spacer layer (Rancourt *et al.*, column 2, lines 41-42), while silicon dioxide is taught as an absorber layer (Rancourt *et al.*, column 3, lines 3-11). Rancourt *et al.* fails to teach applying a coating stack of alternately conductive and non-conductive layers. There is no suggestion for applying alternately conductive and non-conductive layers, in particular with the layer thicknesses as defined in the above claims. Moreover, even if the thorium fluoride layers described in Rancourt *et al.* would be considered as being electrically conductive, then it is observed that the first layer applied on the solar cell substrate would be an electrically conductive layer and that each of these layers have a thickness in the range of 592-1181 nm, thereby strongly teaching away from the coating stack design as defined in the enclosed claims proposal (Rancourt *et al.*, column 5, lines 6-32).

The Commissioner is hereby authorized to charge any deficiency, or credit any overpayment, in the fee(s) filed, or asserted to be filed, or which should have been filed herewith (or with any paper hereafter filed in this application by this firm) to our Deposit Account No. 14-1140.

Respectfully submitted,

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